2811

IFW

Attorney Docket No. 1033033-000026

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of	)	
	)	
Stephan Geiger et al.	)	Group Art Unit:
	)	
Application No.: 10/527,705	)	Examiner:
	)	
Filed: March 11, 2005	)	Confirmation No.: 5278
	)	
For: DIODE-PUMPED SOLID-STATE LASER HAVING A THERMAL LENS INSIDE THE RESONATOR	)	

REQUEST FOR CORRECTED OFFICIAL FILING RECEIPT

Commissioner for Patents
Office of Initial Patent Examination
Customer Service Center
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Enclosed is a copy of the Official Filing Receipt marked in red to show correction that is needed. The correction is as follows:

Please change the title to - -Diode-pumped solid-state laser having a thermal lens inside the resonator- -.

Issuance of a corrected Official Filing Receipt is respectfully requested.

Respectfully submitted,

BUCHANAN INGERSOLL PC

Date: February 10, 2006

By: _____
Patrick C. Keane
Registration No. 32,858

P.O. Box 1404
Alexandria, Virginia 22313-1404
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UNITED STATES PATENT AND TRADEMARK OFFICE

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APPL NO.	FILING OR 371 (c) DATE	ART UNIT	FIL FEE REC'D	ATTY.DOCKET NO	DRAWINGS	TOT CLMS	IND CLMS
10/527,705	09/15/2005	2811	1030	033033-026	2	10	1

CONFIRMATION NO. 5278

FILING RECEIPT

OC000000017991954

21839
BUCHANAN INGERSOLL PC
(INCLUDING BURNS, DOANE, SWECKER & MATHIS)
POST OFFICE BOX 1404
ALEXANDRIA, VA 22313-1404

Date Mailed: 02/06/2006

Receipt is acknowledged of this regular Patent Application. It will be considered in its order and you will be notified as to the results of the examination. Be sure to provide the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION when inquiring about this application. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please mail to the Commissioner for Patents P.O. Box 1450 Alexandria Va 22313-1450. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections (if appropriate).**

Applicant(s)

Stephan Geiger, Prittlbach, GERMANY;
Martin Paster, Ebersberg, GERMANY;
Siegfried Freer, Germering, GERMANY;

Power of Attorney: The patent practitioners associated with Customer Number **21839**.

Domestic Priority data as claimed by applicant

This application is a 371 of PCT/EP03/10054 09/10/2003

Foreign Applications

GERMANY 102 41 988.4 09/11/2002

Projected Publication Date: 05/18/2006

Non-Publication Request: No

Early Publication Request: No

1033033-000026

Title

Diode-pumped ~~solid~~ solid-state laser ~~comprising~~ having a thermal lens inside the resonator

PCK/NEW/RSC

Preliminary Class

257

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Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

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Title 35, United States Code, Section 184
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PCT Postcard

Applicant/ Inventor: Stephan Geiger et al. **Appln. No.:**

Docket No.: 033033-026 **Working Atty.:** Patrick C. Keane / rsc **Date:** March 11, 2005

Title: DIODE-PUMPED SOLID-STATE LASER HAVING A THERMAL LENS INSIDE THE RESONATOR

Dkt. Clerk Initials

The following was/were received in the U.S. Patent and Trademark Office on the date stamped hereon:

- ☐ Transmittal Letter to the U.S. Receiving Office/ Response to Invitation (PTO-1382)
- ☒ Transmittal Letter to U.S. Designated/Elected Office (DO/EO/US) Concerning Filing Under 35 USC 371 (PTO-1390)
- ☐ PCT Request (PCT/RO/101) ( ) pgs.

INCLUDING:

- ☒ Specification (pages 1 - 9)
- ☒ Claims (claims(s) 1 - 10 , 3 pgs.)
- ☒ Drawings (Fig(s). 1 - 2 , 2 pgs.)
- ☒ Abstract of the Disclosure
- ☐ PCT Fee Calculation Sheet Annex to the Request (PCT/RO/101 (Annex))
- ☐ PCT Demand (PCT/IPEA/401) International Preliminary Examination Report
- ☐ PCT Fee Calculation Sheet Annex to Demand for Int'l. Preliminary Exam. (PCT/IPEA/401 (Annex))
- ☐ PCT Notice of Confirmation of Precautionary Designations (PCT/RO/144)
- ☐ Executed Declaration/Power of Attorney
- ☐ Unexecuted Declaration/Power of Attorney
- ☐ Assignment/Assignment Recordation Form Cover Sheet (PTO-1595)
- ☐ Appointment of Agent
- ☒ Preliminary Amendment
- ☐ Information Disclosure Statement Transmittal
- ☒ Information Disclosure Citation (PTO-1449)
- ☒ Information Disclosure Statement w/ 1 document(s)
- ☒ Patent Application Data Sheet
- ☒ Gen. Authorization for Petition for Ext. of Time and Payment of Fees
- ☐ Diskette
- ☐ Check for $ is enclosed
- ☐ Check for $ is enclosed
- ☐ Charge $ to Deposit Account
- ☒ Charge $ 1,000.00 to credit card. Form PTO-2038 is attached.
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PCT Postcard

Applicant/ Inventor: Stephan Geiger et al. **Appln. No.:**

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- ☐ PCT Demand (PCT/IPEA/401) International Preliminary Examination Report
- ☐ PCT Fee Calculation Sheet Annex to Demand for Int'l. Preliminary Exam. (PCT/IPEA/401 (Annex))
- ☐ PCT Notice of Confirmation of Precautionary Designations (PCT/RO/144)
- ☐ Executed Declaration/Power of Attorney
- ☐ Unexecuted Declaration/Power of Attorney
- ☐ Assignment/Assignment Recordation Form Cover Sheet (PTO-1595)
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THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of	Group Art Unit: Unassigned
Stephen GEIGER et al.	Examiner: Unassigned
Application No.: Unassigned	Confirmation No.: Unassigned
Filed: March 11, 2005	
For: DIODE-PUMPED SOLID-STATE LASER HAVING A THERMAL LENS INSIDE THE RESONATOR(As Amended)	

PRELIMINARY AMENDMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Prior to examination, kindly amend the above-captioned application as follows:

4/13
3-11-05

AMENDMENTS TO THE SPECIFICATION:

Please replace the title with the following amended title:

"DIODE-PUMPED ~~SOLID~~ SOLID-STATE LASER ~~COMPRISING~~ HAVING A THERMAL LENS INSIDE THE RESONATOR"

Please add the following new paragraph immediately after the title appearing on page 1.

This disclosure is based upon German Application No. 102 41 988.4, filed September 11, 2002, and International Application No. PCT/EP2003/010054, filed September 10, 2003, the contents of which are incorporated herein by reference.

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (Original) A diode-pumped solid-state laser having an asymmetrical optical resonator provided with at least two resonator mirrors, inside said resonator being provided at least one thermal lens having an optical refractive power D and having two principal planes respectively and said resonator being definable by the following stability criteria:

$$0<G_1 \cdot G_2<1$$

with $G_1 = 1-L^*/R_1-D \cdot d_2$

$G_2 = 1-L^*/R_2 \cdot D \cdot d_1$

and $L^* = d_1+d_2-D \cdot d_1 \cdot d_2$

d_1, d_2 the distances of the resonator mirror from the principal planes of the thermal lens

R_1, R_2 the radii of curvature of the resonator mirrors

wherein the values d_1, d_2, R_1 and R_2 are selected in such a manner that the following critical refractive powers D_I, D_{II}, D_{III} and D_{IV}, for which

$$D_I = -\frac{1}{R_1 - d_1} - \frac{1}{R_2 - d_2},\ D_{II} = \frac{1}{d_2} - \frac{1}{R_1 - d_1},\ D_{III} = \frac{1}{d_1} - \frac{1}{R_2 - d_2},\ D_{IV} = \frac{1}{d_1} + \frac{1}{d_2}$$

applies, the following equations are fulfilled:

$$D_{II} - D_I = D_{IV} - D_{III} \geq 8 \text{ dptr.}$$
$$|D_{III} - D_{II}| \geq 2 \text{ dptr.}$$

2. (Original) The diode-pumped solid-state laser according to claim 1, wherein an intracavity quality-switch or an extracavity modulator is provided.

3. (Original) The diode-pumped solid-state laser according to claim 2, wherein said quality -switch is an intracavity acouso-optical or electro-optical Q-switch.

4. (Currently Amended) The diode-pumped solid-state laser according to ~~claims 1 to 3~~ claim 1, wherein said asymmetrical optical resonator is provided with a convex-plane, convex-concave or convex-convex resonator construction.

5. (Currently Amended) The diode-pumped solid-state laser according to ~~one of the claims 1 to 4~~ claim 1, wherein provided is an intracavity laser medium in the form of at least one laser crystal doped with one or a multiplicity of the following doping substances: Nd, Yb, Cr, Tm, Ho or Er.

6. (Original) The diode-pumped solid-state laser according to claim 5, wherein said laser crystal comprises the following doped crystals: Nd:YAG, Nd:YVO_4, Nd:YLF, Nd:GVO_4,

Nd:YPO_4, Nd:BEL, Nd:YALO, Nd:LSB, Yb:YAG, Yb:FAB, Cr:LiSAF, Cr:LiCAF, Cr:LiSGAF, Cr:YAG, Tm-Ho:YAG, Tm-Ho:YLF, Er:YLF or Er:GSGG.

7. (Currently Amended) The diode-pumped solid-state laser according to claim 5 ~~or 6~~, wherein said laser crystal possesses strong thermal optical focussing properties and represents said thermal lens inside said resonator.

8. (Currently Amended) The diode-pumped solid-state laser according to ~~one of the claims 1 to 7~~ claim 1, wherein at least one diode laser unit is provided as said pumped-light source, whose pumped light is directed or deflected in longitudinal direction to the optical axis of said thermal lens.

9. (Currently Amended) The diode-pumped solid-state laser according to ~~one of claims 1 to 8~~ claim 1, wherein using a Nd:YVO_4 laser crystal and pumped-light power of at least 10 W, the following peak pulse powers PP are attainable based on the pulse repetition frequency RF, at which the solid-state laser is operatable:

RF[kHz]	PP[kW]
10	>60
30	>30
60	>10
90	>5

10. (Original) The diode-pumped solid-state laser according to claim 9, wherein the laser pulses emitted by said solid-state laser have the following pulse widths PW at pulse repetition frequencies RF:

RF[kHz]	PW[ns]
10	~7
20	~10
30	~14
50	~18
75	~22
100	~28
150	~35

REMARKS

By way of the foregoing amendments, the specification has been amended to incorporate the priority information. The title has been amended to conform to the English language translation. Claims 4, 5, and 7-9 have been amended to delete multiple dependencies. No new matter has been introduced by these changes.

It is requested that the application be examined on the basis of the specification, the title, and the claims as amended.

Early and favorable consideration with respect to this application is respectfully requested.

Should any questions arise in connection with this application, the undersigned respectfully requests that he be contacted at the number indicated below.

Respectfully submitted,

BURNS, DOANE, SWECKER & MATHIS, L.L.P.

Date: March 11, 2005

By: _____
Patrick C. Keane
Registration No. 32,858

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